BioMap and Living Waters

Guiding Land Conservation for Biodiversity in Massachusetts

Core Habitats of Erving

This report and associated map provide information about important sites for biodiversity conservation in your area.

This information is intended for conservation planning, and is not intended for use in state regulations.

Produced by:

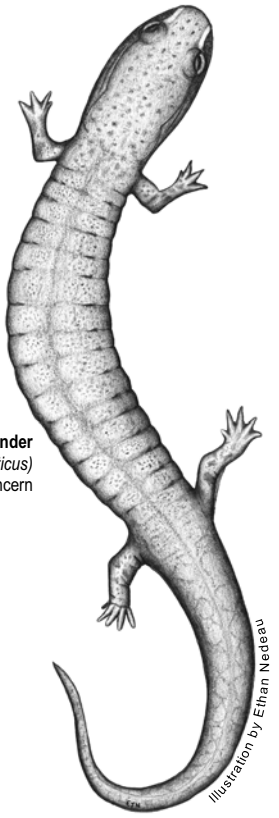
Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries and Wildlife
Executive Office of Environmental Affairs
Commonwealth of Massachusetts

Produced in 2004

BioMap and Living Waters:
Guiding Land Conservation for Biodiversity in Massachusetts

Table of Contents

* Depending on the location of Core Habitats, your city or town may not have all of these sections.



Spring Salamander
(Gyrinophilus porphyriticus)
Species of Special Concern

Funding for this project was made available by the Executive Office of Environmental Affairs, contributions to the Natural Heritage & Endangered Species Fund, and through the State Wildlife Grants Program of the US Fish & Wildlife Service.

Natural Heritage & Endangered Species Program

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For more information on rare species and natural communities, please see our fact sheets online at ***www.nhesp.org***

BioMap and Living Waters:
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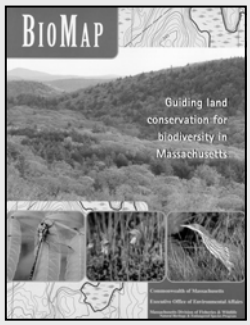
Introduction

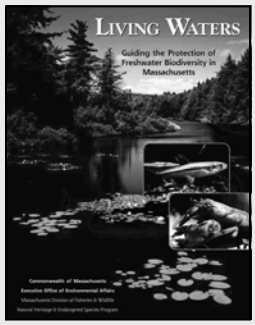
In this report, the Natural Heritage & Endangered Species Program provides you with site-specific biodiversity information for your area. Protecting our biodiversity today will help ensure the full variety of species and natural communities that comprise our native flora and fauna will persist for generatons to come.

The information in this report is the result of two statewide biodiversity conservation planning projects, ***BioMap*** and ***Living Waters***. The goal of the BioMap project, completed in 2001, was to identify and delineate the most important areas for the long-term viability of terrestrial, wetland, and estuarine elements of biodiversity in Massachusetts. The goal of the Living Waters project, completed in 2003, was to identify and delineate the rivers, streams, lakes, and ponds that are important for freshwater biodiversity in the Commonwealth. These two conservation plans are based on documented observations of rare species, natural communities, and exemplary habitats.

What is a Core Habitat?

Both BioMap and Living Waters delineate ***Core Habitats*** that identify the most critical sites for biodiversity conservation across the state. Core Habitats represent habitat for the state's most viable rare plant and animal populations and include exemplary natural communities and aquatic habitats. Core Habitats represent a wide diversity of rare species and natural communities (see Table 1), and these areas are also thought to contain virtually all of the other described species in Massachusetts. Statewide, BioMap Core Habitats encompass 1,380,000 acres of uplands and wetlands, and Living Waters identifies 429 Core Habitats in rivers, streams, lakes, and ponds.





Get your copy of the ***BioMap*** and ***Living Waters*** reports! Contact Natural Heritage at 508-792-7270, Ext. 200 or email natural.heritage@state.ma.us. Posters and detailed technical reports are also available.

Core Habitats and Land Conservation

One of the most effective ways to protect biodiversity for future generations is to protect Core Habitats from adverse human impacts through land conservation. For Living Waters Core Habitats, protection efforts should focus on the ***riparian areas***, the areas of land adjacent to water bodies. A naturally vegetated buffer that extends 330 feet (100 meters) from the water's edge helps to maintain cooler water temperature and to maintain the nutrients, energy, and natural flow of water needed by freshwater species.

In Support of Core Habitats

To further ensure the protection of Core Habitats and Massachusetts' biodiversity in the long-term, the BioMap and Living Waters projects identify two additional areas that help support Core Habitats.

In BioMap, areas shown as ***Supporting Natural Landscape*** provide buffers around the Core Habitats, connectivity between Core Habitats, sufficient space for ecosystems to function, and contiguous undeveloped habitat for common species. Supporting Natural Landscape was

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generated using a Geographic Information Systems (GIS) model, and its exact boundaries are less important than the general areas that it identifies. Supporting Natural Landscape represents potential land protection priorities once Core Habitat protection has been addressed.

In Living Waters, ***Critical Supporting Watersheds*** highlight the immediate portion of the watershed that sustains, or possibly degrades, each freshwater Core Habitat. These areas were also identified using a GIS model. Critical Supporting Watersheds represent developed and undeveloped lands, and can be quite large. Critical Supporting Watersheds can be helpful in land-use planning, and while they are not shown on these maps, they can be viewed in the Living Waters report or downloaded from www.mass.gov/mgis.

Understanding Core Habitat Species, Community, and Habitat Lists

What's in the List?

Included in this report is a list of the species, natural communities, and/or aquatic habitats for each Core Habitat in your city or town. The lists are organized by Core Habitat number.

For the larger Core Habitats that span more than one town, the species and community lists refer to the entire Core Habitat, not just the portion that falls within your city or town. For a list of all the state-listed rare species within your city or town's boundary, whether or not they are in Core Habitat, please see the town rare species lists available at www.nhesp.org.

The list of species and communities within a Core Habitat contains only the species and natural communities that were explicitly included in a given BioMap or Living Waters Core Habitat. Other rare species or examples of other natural communities may fall within the Core Habitat, but for various reasons are not included in the list. For instance, there are a few rare species that are omitted from the list or summary because of their particular sensitivity to the threat of collection. Likewise, the content of many very small Core Habitats are not described in this report or list, often because they contain a single location of a rare plant

Table 1. The number of rare species and types of natural communities explicitly included in the BioMap and Living Waters conservation plans, relative to the total number of native species statewide.

BioMap

	Species and Verified Natural Community Types	
Biodiversity Group	**Included in BioMap**	**Total Statewide**
Vascular Plants	246	1,538
Birds	21	221 breeding species
Reptiles	11	25
Amphibians	6	21
Mammals	4	85
Moths and Butterflies	52	An estimated 2,500 to 3,000
Damselflies and Dragonflies	25	An estimated 165
Beetles	10	An estimated 2,500 to 4,000
Natural Communities	92	> 105 community types

Living Waters

	Species	
Biodiversity Group	**Included in Living Waters**	**Total Statewide**
Aquatic Vascular Plants	23	114
Fishes	11	57
Mussels	7	12
Aquatic Invertebrates	23	An estimated > 2500

species. Some Core Habitats were created for suites of common species, such as forest birds, which are particularly threatened by habitat fragmentation. In these cases, the individual common species are not listed.

What does 'Status' mean?

The Division of Fisheries and Wildlife determines a status category for each rare species listed under the Massachusetts Endangered Species Act, M.G.L. c.131A, and its implementing regulations, 321 CMR 10.00. Rare species are categorized as Endangered, Threatened, or of Special Concern according to the following:

- ***Endangered*** species are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts.
- ***Threatened*** species are likely to become Endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range.
- ***Special Concern*** species have suffered a decline that could threaten the species if allowed to continue unchecked or occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become Threatened in Massachusetts.

In addition, the Natural Heritage & Endangered Species Program maintains an unofficial ***watch list*** of plants that are tracked due to potential conservation interest or concern, but are not regulated under the Massachusetts Endangered Species Act or other laws or regulations. Likewise, described natural communities are not regulated any laws or regulations, but they can help to identify ecologically important areas that are worthy of protection. The status of natural communities reflects the documented number and acreages of each community type in the state:

- ***Critically Imperiled*** communities typically have 5 or fewer documented sites or have very few remaining acres in the state.
- ***Imperiled*** communities typically have 6-20 sites or few remaining acres in the state.
- ***Vulnerable*** communities typically have 21-100 sites or limited acreage across the state.
- ***Secure*** communities typically have over 100 sites or abundant acreage across the state; however excellent examples are identified as Core Habitat to ensure continued protection.

Legal Protection of Biodiversity

BioMap and Living Waters present a powerful vision of what Massachusetts would look like with full protection of the land that supports most of our biodiversity. To create this vision, some populations of state-listed rare species were deemed more likely to survive over the long-term than others.

Regardless of their potential viability, all sites of state-listed species have full legal protection under the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (321 CMR 10.00). Habitat of state-listed wildlife is also protected under the Wetlands Protection Act Regulations (310 CMR 10.37 and 10.59). The ***Massachusetts Natural Heritage Atlas*** shows **Priority Habitats**, which are used for regulation under the Massachusetts Endangered Species Act and Massachusetts Environmental Policy Act (M.G.L. c.30) and **Estimated Habitats**, which are used for regulation of rare wildlife habitat under the Wetlands Protection Act. For more information on rare species regulations, see the *Massachusetts Natural Heritage Atlas*, available from the Natural Heritage & Endangered Species Program in book and CD formats.

BioMap and Living Waters are conservation planning tools and do not, in any way, supplant the Estimated and Priority Habitat Maps which have regulatory significance. Unless and until the combined BioMap and Living Waters vision is fully realized, we must continue to protect all populations of our state-listed species and their habitats through environmental regulation.

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Understanding Core Habitat Summaries

Following the BioMap and Living Waters Core Habitat species and community lists, there is a descriptive summary of each Core Habitat that occurs in your city or town. This summary highlights some of the outstanding characteristics of each Core Habitat, and will help you learn more about your city or town's biodiversity. You can find out more information about many of these species and natural communities by looking at specific ***fact sheets*** at www.nhesp.org.

Next Steps

BioMap and Living Waters were created in part to help cities and towns prioritize their land protection efforts. While there are many reasons to conserve land – drinking water protection, recreation, agriculture, aesthetics, and others – BioMap and Living Waters Core Habitats are especially helpful to municipalities seeking to protect the rare species, natural communities, and overall biodiversity within their boundaries. Please use this report and map along with the rare species and community fact sheets to appreciate and understand the biological treasures in your city or town.

Protecting Larger Core Habitats

Core Habitats vary considerably in size. For example, the average BioMap Core Habitat is 800 acres, but Core Habitats can range from less than 10 acres to greater than 100,000 acres. These larger areas reflect the amount of land needed by some animal species for breeding, feeding, nesting, overwintering, and long-term survival. Protecting areas of this size can be very challenging, and requires developing partnerships with neighboring towns.

Prioritizing the protection of certain areas within larger Core Habitats can be accomplished through further consultation with Natural Heritage Program biologists, and through additional field research to identify the most important areas of the Core Habitat.

Additional Information

If you have any questions about this report, or if you need help protecting land for biodiversity in your community, the Natural Heritage & Endangered Species Program staff looks forward to working with you.

Contact the Natural Heritage & Endangered Species Program:

by Phone *508-792-7270, Ext. 200*

by Fax: *508-792-7821*

by Email: *natural.heritage@state.ma.us*.

by Mail: *North Drive*
Westborough, MA 01581

The GIS datalayers of BioMap and Living Waters Core Habitats are available for download from MassGIS: www.mass.gov/mgis

Check out www.nhesp.org for information on:

- Rare species in your town
- Rare species fact sheets
- BioMap and Living Waters projects
- Natural Heritage publications, including:
  - Field guides
  - Natural Heritage Atlas, and more!

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BioMap: Species and Natural Communities

Erving

Core Habitat BM231

Natural Communities

Common Name	Scientific Name	Status
Calcareous Rock Cliff Community		Vulnerable
Calcareous Talus Forest/Woodland		Vulnerable
High-Terrace Floodplain Forest		Imperiled
Major-River Floodplain Forest		Imperiled

Plants

Common Name	Scientific Name	Status
Gray's Sedge	*Carex grayi*	Threatened
Michaux's Sandwort	*Minuartia michauxii*	Threatened
Putty-Root	*Aplectrum hyemale*	Endangered
Red Mulberry	*Morus rubra*	Endangered
White Adder's-Mouth	*Malaxis monophyllos var brachypoda*	Endangered

Invertebrates

Common Name	Scientific Name	Status
Cobra Clubtail	*Gomphus vastus*	Special Concern

Vertebrates

Common Name	Scientific Name	Status
Bald Eagle	*Haliaeetus leucocephalus*	Endangered
Jefferson Salamander	*Ambystoma jeffersonianum*	Special Concern
Marbled Salamander	*Ambystoma opacum*	Threatened
Spotted Turtle	*Clemmys guttata*	Special Concern

BioMap: Species and Natural Communities

Erving

Core Habitat BM427

Natural Communities

Common Name	Scientific Name	Status
Acidic Rock Cliff Community		Secure
Northern Hardwoods - Hemlock - White Pine Forest		Secure
Shrub Swamp		Secure

Core Habitat BM460

Natural Communities

Common Name	Scientific Name	Status
Acidic Rock Cliff Community		Secure
Acidic Talus Forest/Woodland		Secure

Core Habitat BM463

Natural Communities

Common Name	Scientific Name	Status
Acidic Rock Cliff Community		Secure

Core Habitat BM466

Vertebrates

Common Name	Scientific Name	Status
Spotted Turtle	*Clemmys guttata*	Special Concern
Spring Salamander	*Gyrinophilus porphyriticus*	Special Concern

Core Habitat BM473

Natural Communities

Common Name	Scientific Name	Status
Kettlehole Level Bog		Imperiled

BioMap: Core Habitat Summaries

Erving

Core Habitat BM231

This Core Habitat, located along the state's northern section of the Connecticut River, contains a variety of unusual natural communities that together support a diversity of plants and animals. This Core Habitat is notable for the rare Cobra Clubtail dragonfly that is not known from anywhere else in the state. It also provides perching and foraging habitat for Bald Eagles, and upland habitats for two rare salamanders. Several rare plant species are found here, many of which are associated with calcareous cliff communities.

Natural Communities

This Core Habitat contains a large and species-rich Calcareous Rock Cliff and Talus Forest that are associated with many rare plant species. Calcareous Rock Cliffs are sparsely vegetated cliff communities. Unusual, highly specialized plants and ferns grow in rocks and ledges in the calcium-rich cliff face. This type of cliff community has more species diversity than Acidic Rock Cliffs. Meanwhile, Calcareous Talus Forest communities develop on boulder strewn slopes below certain cliffs, with scattered trees, shrubs, vines, and ferns. There is often a gradient of vegetation density as the slope changes, with more trees on the lower slope. This Core Habitat also contains a Major-River Floodplain Forest of good quality, which has a well-developed canopy of mature trees and only moderate levels of disturbances. Abutting the Major-River Floodplain Forest is a very uncommon type of natural community, a well-developed High-Terrace Floodplain Forest. High-Terrace Floodplain Forests are deciduous hardwood forests that occur along riverbanks, above the zone of annual flooding. Although they do not flood annually, they flood often enough for the soil to be moderately enriched.

Plants

Several rare plant populations are associated with the Calcareous Rock Cliff community overlooking the river, including Michaux's Sandwort and Red Mulberry. Nearby wetland areas support additional rare plant species.

Invertebrates

This Core Habitat includes an 8-km stretch of the Connecticut River between Gill and Northfield that is habitat for the rare Cobra Clubtail dragonfly, a species that requires large, sand-bottomed rivers and is not known to occur anywhere in Massachusetts but along the northern portion of the Connecticut River. Virtually all the Cobra Clubtail's habitat here appears to be unprotected. Protecting this species' habitat along the river represents one of the greater conservation challenges in Massachusetts. Pollution and hydrologic alterations originating upstream, downstream, or within this Core Habitat are major threats.

Vertebrates

This Core Habitat encompasses partially forested riverbank along the western shore of the Connecticut River that provides undisturbed perching and foraging habitat for wintering and non-breeding Bald Eagles. It also includes upland forest dominated by eastern hemlock and red maple with scattered vernal pools, near and including Stacy Mountain in Gill. Vernal pools and adjacent forests provide habitat for Marbled and Jefferson Salamanders. Spotted Turtles are present here as well. Over half this area is already protected as conservation land.

BioMap: Core Habitat Summaries

Erving

Core Habitat BM427

Natural Communities

This Core Habitat contains a high-quality Acidic Rock Cliff with minor disturbances, and a moderate-sized, well-developed Shrub Swamp with good species and habitat diversity. Acidic Rock Cliffs are open communities of extremely sparse plants, with occasional dense lichen, on ledges and in crevices of acidic cliff faces. Shrub Swamp communities are a common and variable type of wetland occurring on seasonally or temporarily flooded soils. They are often found in the transition zone between emergent marshes and swamp forests. Both of the communities in this Core Habitat are well-buffered by a large tract of Northern Hardwoods-Hemlock-White Pine Forest.

Core Habitat BM460

Natural Communities

This Core Habitat, and the associated adjacent Core Habitat, contain some of the tallest Acidic Rock Cliffs in the state. Acidic Rock Cliffs are open communities of extremely sparse plants, with occasional dense lichen, on ledges and in crevices of acidic cliff faces. Here the cliffs are disturbance-free and well-buffered by a forested landscape. Below the cliffs is a very good example of an Acidic Talus Forest/Woodland created by boulders falling from the cliffs. Acidic Talus Forest communities develop on boulder strewn slopes below cliffs, with scattered trees, tall shrubs, vines, and ferns. There is often a gradient of vegetation density as the slope changes, with more trees on the lower slope.

Core Habitat BM463

Natural Communities

This Core Habitat, and the associated adjacent Core Habitat, contain some of the tallest Acidic Rock Cliffs in the state. Acidic Rock Cliffs are open communities of extremely sparse plants, with occasional dense lichen, on ledges and in crevices of acidic cliff faces. The cliffs here are disturbance-free and well-buffered in a forested landscape.

Core Habitat BM466

Vertebrates

This long Core Habitat, centered on Whetstone Brook and its tributaries, encompasses over four miles of brooks and streams, small riparian forested wetlands, wet meadows, and upland forests. The cold headwater brooks and seeps provide significant and connected habitat for Spring Salamanders. Spotted Turtles are also present here, albeit in lower densities. Four-toed Salamanders may be present in the seeps and swamps where sphagnum moss is abundant. The area within this Core Habitat is largely protected as conservation land.

BioMap: Core Habitat Summaries

Erving

Core Habitat BM473

Natural Communities

This Core Habitat contains a Kettlehole Level Bog with a well-developed Sphagnum mat and habitat diversity. Kettlehole Level Bogs are acidic dwarf shrub peatlands with little water input or outflow that form in circular depressions left by melting iceblocks in sandy glacial outwash. The vegetation in Kettlehole Level Bogs usually grows in concentric rings. The bog here is of moderate quality due to its proximity to residential developments.

Core Habitat LW259

Plants

Common Name	Scientific Name	Status
Algae-like Pondweed	*Potamogeton confervoides*	Threatened

Core Habitat LW307

Plants

Common Name	Scientific Name	Status
Variable Pondweed	*Potamogeton diversifolius*	Endangered

Invertebrates

Common Name	Scientific Name	Status
Triangle Floater	*Alasmidonta undulata*	Special Concern

Fishes

Common Name	Scientific Name	Status
Bridle Shiner	*Notropis bifrenatus*	Special Concern

Core Habitat LW367

Exemplary Habitats

Common Name	Scientific Name	Status
Invertebrate Habitat		----------

Core Habitat LW416

Exemplary Habitats

Common Name	Scientific Name	Status
Invertebrate Habitat		----------

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Core Habitat LW424

Exemplary Habitats

Common Name	Scientific Name	Status
Invertebrate Habitat		----------

Invertebrates

Common Name	Scientific Name	Status
Eastern Pearlshell	*Margaritifera margaritifera*	----------

Fishes

Common Name	Scientific Name	Status
Eastern Silvery Minnow	*Hybognathus regius*	Special Concern

Living Waters: Core Habitat Summaries

Erving

Core Habitat LW259

Laurel Lake, a naturally acidic lake, is home to a rare species of aquatic plant, the Algae-like Pondweed. This species is so named because of its filamentous and many-branched underwater leaves. Native freshwater plants like the Algae-like Pondweed are an important component of aquatic ecosystems, providing habitat and nutrition for fishes and invertebrates, and adding oxygen to the water through photosynthesis.

Core Habitat LW307

The Millers River supports four of the state's twelve freshwater mussel species, including a vigorous population of the rare Triangle Floater that is distributed throughout the river. This mussel is found in deposits of sand and gravel that are out of the way of the swift current, such as those found along sandy shorelines, in backwaters, behind large boulders, in pools below riffles, and in slower-flowing runs.

A section of the Millers River in Orange also supports one of three known population of Bridle Shiner in the Millers Watershed. This Core Habitat supports a second Bridle Shiner population in Willow Brook and its tributaries in New Salem and Athol. This fish Species of Special Concern has a small range from southern New England to South Carolina, and has been declining or extirpated in much of the region. The Bridle Shiner is typically found in well-vegetated, quiet waters. It feeds on small aquatic insects and other invertebrates, and is an important part of the freshwater ecosystem as prey for larger fishes.

This Core Habitat is also important because the Commonwealth's only known population of the Endangered Variable Pondweed grows in the waters of Lake Rohunta. This species is nearing the northern extent of its range in Massachusetts. Native freshwater plants like the Variable Pondweed are a key component of aquatic ecosystems, providing habitat and nutrition for fishes and invertebrates, and adding oxygen to the water through photosynthesis.

Core Habitat LW367

Keyup Brook originates in Northfield State Forest and its cool, clear waters flow south through beaver meadows and a forested swamp dominated by Eastern Hemlock. The Core Habitat supports a healthy community of the more ecologically sensitive aquatic insects: mayflies, stoneflies, and caddisflies. The streambed is made up of boulders, cobbles, pebbles, gravels, and sands that provide excellent habitat for these aquatic invertebrates. The naturally vegetated surroundings help maintain the high-quality stream habitat by shading the water to keep it cool, by providing a natural energy source to the stream ecosystem in the form of leaves, needles, and sticks, and by controlling the runoff of sediments, excess nutrients, and water.

Core Habitat LW416

Keyup Brook supports a healthy community of the more ecologically sensitive aquatic insects: mayflies, stoneflies, and caddisflies. The presence of this invertebrate community indicates the stream habitats here are relatively free of the impacts of development. Naturally vegetated

stream banks along the Core Habitat and upstream help maintain the habitat quality, shading the water to keep it cool and controlling the runoff of sediments, excess nutrients, and water.

Core Habitat LW424

The Connecticut River and its tributaries that flow through less developed land are key Core Habitats in Massachusetts. This section of the Connecticut River begins at the state border and continues south to the Turners Falls dam. The Connecticut River itself is home to ten species of state-listed dragonflies, the majority of which are found only in large rivers. The Connecticut River tributaries also are important habitat for state-listed dragonflies found in smaller rivers. The Connecticut River and the Connecticut River Valley provide a northward corridor for more southerly species, thus contributing a unique fauna to Massachusetts' biodiversity.

In Gill and Northfield, a portion of the Connecticut River and its associated tributaries are also habitat for the Eastern Silvery Minnow, a fish that is state-listed as a Species of Special Concern. This species is only known from the Connecticut River and lower Deerfield River in Massachusetts. It requires backwaters for spawning, where it lays eggs directly on the river bottom in areas where emergent vegetation provides cover. Siltation, pollution, and water level changes threaten this species.

A tributary to the river, Dry Brook, also supports a dense population of the Eastern Pearlshell, a species of freshwater mussel known from only 22 water bodies in Massachusetts. This species inhabits streams and rivers that are cool and clean enough to support its trout fish hosts. Protection of the remaining undeveloped riparian areas along this Core Habitat will help maintain its quality.

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